

Salinity Control Program: Fish and Wildlife Habitat Evaluation Procedures

SUMMARY: These habitat evaluation procedures have been prepared by a joint Bureau of Reclamation (Reclamation) – U.S. Fish and Wildlife Service (FWS) team to satisfy the requirements of the Salinity Control Act. Salinity control projects must provide for the mitigation of fish and wildlife (habitat) values lost as a result of implementing a project. A standardized methodology for determining habitat functions and values is presented. Monitoring and recordkeeping are discussed.

I. AUTHORITY

The requirement and authority to implement habitat replacement features were first included in the 1984 amendments, Public Law 98-569, to the Salinity Control Act, Public Law 93-320 (Act). The Act, as amended, states:

- Section 202(a)(1)-(5): “The Secretary shall construct, operate, and maintain the salinity control units ... consisting of measures to replace incidental fish and wildlife values foregone.”
- Section 202(b)(6): "In implementing the units authorized to be constructed pursuant to subsection (a) of this section, the Secretary shall implement measures to replace incidental fish and wildlife values foregone concurrently with the implementation of a unit's, or a portion of a unit's, related features.”

The Salinity Control Act’s 1995 and 2008 amendments, Public Law 104-20 and Public Law 110-246, created the Basinwide Salinity Control Program and the Basin States Program, respectively. These amendments authorized Reclamation to implement cost-effective opportunities to control salinity via a one-time grant that is limited to an applicant’s competitive bid. The cost of this mitigation has typically been included in the costs of the salinity control projects used in computing cost effectiveness. Habitat replacement requirements established in the 1984 amendments extend to salinity control projects implemented under the Basinwide and Basin States Programs.

II. IMPORTANT CONSIDERATIONS

A. Funding Opportunity Announcement (FOA)

The costs of implementing habitat replacement projects are calculated as part of the salinity project’s cost effectiveness value (cost per ton). If the habitat replacement project will involve the construction of water features, there may be a reduction in salt credit for the salinity project, which may impact the project’s cost effectiveness value or result in a decrease of funding. If habitat replacement project costs are unknown, an assumption of 5% can be used as a minimum

for calculating the salinity project's cost effectiveness; however, the habitat project could cost more. Successful project applicants become responsible for formulation, implementation, and long-term operation and maintenance of their habitat replacement projects. Any avoidance measures or land acquisition should be identified and authorized prior to project submittal through the FOA. Approval must be requested and obtained prior to FOA submittal if an applicant wishes to utilize "excess" habitat credits created by a previous habitat replacement project.

B. Regulatory Requirements

Habitat losses and the habitat replacement plan will be included in the salinity control project's NEPA analysis. The habitat replacement portion of a salinity control project is subject to the same regulatory requirements as the salinity control project. Therefore, the Endangered Species Act, Clean Water Act, National Historic Preservation Act, and other considerations need to be evaluated and accounted for. Selenium sampling of water used for any proposed open water features is needed to ensure compliance with state water quality standards. Reclamation should be included during the development stages of any habitat replacement plan to help ensure compliance with regulatory requirements.

There is a general assumption that wetlands associated with canal and lateral seepage do not meet the definition of jurisdictional wetlands in the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands and the 1987 Corps of Engineers Wetlands Delineation Manual. If wetland sites are classified as jurisdictional under the Clean Water Act, additional permitting and mitigation may be required after consulting with the U.S. Army Corps of Engineers.

III. GOAL

The intent of these procedures is to provide a consistent methodology for quantifying habitat losses and evaluating habitat replacement sites.

IV. DEFINITIONS

Acquisition is the purchase of land and/or recordation of an approved, protective mechanism for the benefit of restoration, preservation and/or protection from imminent threat of development.

Additionality is a project or practice that will improve upon an existing condition, which is demonstrably new and would not have occurred otherwise. When identifying potential habitat replacement projects on land currently managed for wildlife, or on public lands with management criteria for wildlife, documentation will be needed to address additionality.

Avoidance of impacts means incorporating measures in a salinity control project that will avoid impacts to existing wetland and riparian habitat. This is the preferred approach to project

planning and implementation if it neither results in deep percolation nor contributes to salinity loading into the Colorado River. Maintaining open segments of canals should be identified and included as part of the applicant's FOA project submittal. When impacts to wetland or riparian habitat are unavoidable, then habitat losses need to be calculated and habitat replacement is required.

Habitat losses include habitat which will be permanently lost due to implementation of the salinity control project. Riparian and wetland habitat types are generally the habitats types which are permanently lost due to their reliance on canal seepage, and therefore are the only habitat types which should be considered when determining habitat losses.

Habitat Quality Score (HQS) is the average value of habitat quality assigned to an area that is calculated using the habitat evaluation criteria set forth in this document.

Preservation of existing pre-project habitat means the habitat will persist in some form after implementing the salinity project due to the presence of other water sources. For example, habitat along a canal which is also located near a natural seep or drainage.

Replacement means the creation or enhancement of riparian or wetland habitat to replace habitat values lost as a result of implementation of a salinity control project. Replacement must result in no net loss of habitat values. Following is an example:

- The implementation of a salinity control project is determined to cause the loss of 20 habitat units.
- To replace that loss, a replacement property is located where the 20 units can be created by enhancing habitat through plantings, grazing management, wetland or riparian area development, weed control, etc.
- The replacement property is determined to have a baseline of 10 habitat units in its current condition; therefore, once the habitat replacement plan is implemented, the habitat replacement project area would need to create 20 habitat units, for a total of 30 habitat units overall.

Total Habitat Value (THV) is a calculation based on the HQS multiplied by the total acreage of a habitat area.

V. ASSUMPTIONS

Basic assumptions of the habitat evaluation procedures include:

- Riparian/wetland habitat should be the main focus when determining habitat value lost, since upland habitat would persist after project implementation. Typically, an evaluator can refer to a plant species' wetland indicator status rating. However, evaluators should have an understanding of the ecological community they are evaluating. Their expertise should be relied upon when determining whether vegetation is present solely or primarily due to the increased soil moisture from canal seepage.

- Unless stated otherwise, noxious weeds (regardless of wetland indicator status rating) should be considered in the habitat value scoring.
- The determination of each habitat's source(s) of water should be made by studying aerial photography, topographic maps, and simple on-site ocular analysis of the habitat site, its surrounding terrain, and the location of the site in relation to its nearest potential water source(s).
- For the purposes of estimating habitat losses, piping or lining an open ditch is assumed to eliminate 100% of the seepage from that ditch. In this case, 100% of adjacent riparian or wetland vegetation providing habitat would be assumed to be lost unless there is some other water source nearby (e.g., an irrigated field, groundwater from another source, or natural seeps and drainages) to maintain a portion of the vegetation. This loss is assumed to be immediate, regardless of how long it might actually take for the vegetation to be lost. Therefore, habitat values calculated for these areas are assumed to be a 100% loss.
- When identifying the apparent source or sources of water supporting each habitat area, wetland and riparian vegetation immediately downslope from a canal can be attributed to canal or lateral seepage, particularly if upland vegetation is found in the area directly upslope from the canal.
- Wetland and riparian vegetation along and immediately downslope of farm ditches within irrigated fields can usually be attributed to deep percolation from on-farm irrigation management, and would therefore remain after construction of the project.
- Streamside habitat and wetlands obviously entirely supported by natural hydrology should not be calculated as a habitat loss. In these situations, identify the area in the losses report and provide rationale for not including the area in the habitat losses calculation.
- In situations where both natural hydrology and canal seepage contribute to a riparian/wetland area, best professional judgment should be used to estimate preservation. To account for the estimated preservation, complete an existing and anticipated future score for the area. The difference between the two should be included in the total habitat units lost.
- The surface area of the open water of the canal should not be included in the acreage when calculating habitat loss. Any open water acreage within a habitat replacement area can be considered when scoring the habitat replacement project.
- Habitat replacement projects must be located on lands where a recorded, legal protective mechanism is in place to ensure the habitat will persist for the required 50 years (i.e. conservation easement).

VI. PROCEDURES

A. Introduction

This protocol has been designed to assess the habitat value of a specified area in a timely and cost-effective manner. Habitat quality will be ascertained using a standardized habitat assessment protocol. This protocol examines various components of both the habitat impacted in the project area and proposed replacement habitat(s) to calculate a value for wildlife and to assign a Habitat Quality Score (HQS). The HQS is calculated using criteria which have been developed to examine aspects of habitat that are essential for wildlife. For each of the habitat evaluation criterion provided in this document, the habitat area is scored from 0 – 10, with 10 having the most value to wildlife and 0 having the least value. After all criteria have been evaluated, the total points are added together and divided by ten (or the total number of criteria evaluated) to determine the HQS. Once the HQS is calculated, the total wildlife habitat value of an area is determined with the following formulas:

For Habitat Losses:

$$\begin{aligned} &\text{Area (acres) of impacted habitat X Habitat Quality Score (HQS) of the impacted habitat} \\ &= \text{Total Habitat Value (THV) (aka Habitat Units lost)} \\ &A \times \text{HQS} = \text{THV lost} \end{aligned}$$

Mathematical rounding rules should be used to round THV figures to the nearest tenth.

For Habitat Replacement:

Step 1.

$$\begin{aligned} &\text{Area (acres) of proposed habitat project X Habitat Quality Score (HQS) of existing habitat} \\ &\quad \text{condition} \\ &= \text{Total Habitat Value (THV) baseline} \\ &A \times \text{HQS} = \text{THV baseline} \end{aligned}$$

Step 2.

$$\begin{aligned} &\text{Area (acres) of proposed habitat project X Habitat Quality Score (HQS) of projected habitat} \\ &\quad \text{condition} \\ &= \text{Total Habitat Value (THV) replacement habitat} \end{aligned}$$

Step 3.

$$\text{THV replacement habitat} - \text{THV baseline} = \text{Habitat Credits generated}$$

Mathematical rounding rules should be used to round THV figures to the nearest tenth.

Using these calculations, a quantitative value for habitat units lost from implementing a salinity control project and created from implementing a habitat replacement project can be generated.

Example:

Five miles of lateral are to be placed in pipe. There are 5 acres of wetlands/riparian vegetation supported by seepage from the lateral. These 5 acres have an HQS of 3. Using the equation, habitat losses for the project equal 15 habitat units (5 acres x 3 HQS = 15).

Replacement lands are typically lands that currently have a low HQS due to current or past management practices, but have the potential for habitat enhancement and/or can be managed in a manner to restore the habitat. Using the example above, the lands will need to have the THV improved from existing conditions by 15 habitat units in order to have no net loss of habitat value. In this example, the replacement area is 5 acres and has an HQS of 4. Therefore, the existing value of the replacement lands is 20 habitat units. A habitat replacement project must be designed to increase the habitat value of the replacement lands to a value of 35 in order to replace the 15 habitat units lost from the salinity project (20 existing habitat units + 15 habitat units lost = 35 habitat units).

A. Habitat Quality Scoring Evaluation Criteria

To proceed with the HQS, examine the habitat types. Riparian and wetland communities serve a broader and more diverse species base as compared to upland communities. Only riparian and wetland community types are evaluated for losses, and habitat replacement projects must restore, enhance and/or protect riparian or wetland habitat to be eligible for further consideration. Evaluators should have an understanding of the ecological community they are evaluating. Best professional judgment is applied during the evaluation, with justification or rationale provided for each score. In some instances, the evaluation criteria may need to be adapted, adjusted, or eliminated to appropriately characterize a specific site. In these cases, written justification must be supplied, explaining those changes and rationale for the changes.

Habitat Losses:

Prior to evaluating the area, determine if the project will result in the loss of riparian or wetland habitat: YES or NO

If YES, proceed to evaluating the habitat. If NO, the habitat does not need to be considered further.

Habitat Replacement:

Prior to evaluating the area, determine if the habitat replacement project will restore/enhance/protect riparian or wetland habitat: YES or NO

If YES, proceed to evaluating the habitat. If NO, the area should not be considered further.

On-site evaluations shall be conducted during the growing season to best determine habitat value.

Evaluation Criteria:

- **Vegetative Diversity:** Evaluate the composition of readily observable riparian/wetland plant species providing wildlife habitat. Determine the number of species of shrubs, grasses, forbs, and trees present.

0	3	5	7	10
Very Low Diversity (Ex. Monoculture)	Low Diversity	Moderate Diversity	High Diversity	Very High Diversity (Ex. Multiple species)

- **Stratification:** Examine the presence of riparian/wetland trees, shrubs, and herbaceous species on site. Evaluate the canopy coverage of the different height levels of vegetation. Layers are considered to be functioning when there are various age classes of trees and shrubs, and/or the layer provides expected cover for that strata. For example, sapling cottonwood trees are not functioning as a tree layer, and therefore would be considered present, but not functioning.

0	2	4	6	8	10
Two layers are absent, the other layer is not functioning. (Ex. Sparsely vegetated; mostly bare ground.)	Two layers are absent, the other layer is functioning.	One layer is absent; one layer is functioning; one layer is present but not functioning.	One layer is absent, but the other two layers are present and functioning.	All appropriate layers are present, but one layer is not functioning.	All appropriate layers are present and functioning.

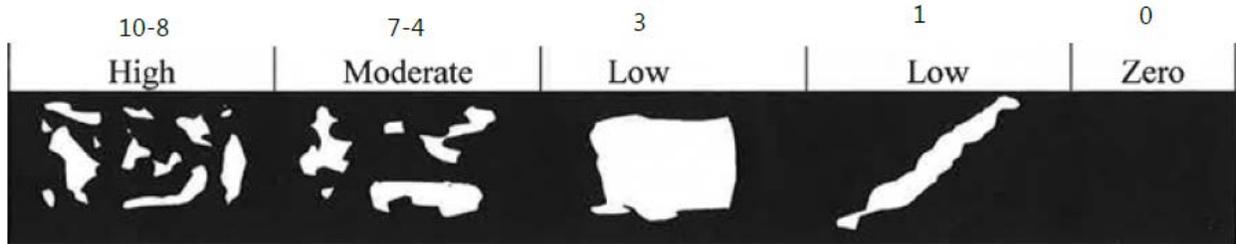
- **Noxious Weeds:** Evaluate the presence of noxious weeds. Noxious weeds are considered to be those weeds included on state and/or county noxious weed lists or watch lists. Are noxious weeds present? What is their relative abundance?

0	2	4	6	8	10
Weeds cover 25% or more of evaluation area.	Weeds cover 20% of evaluation area.	Weeds cover 15% of evaluation area.	Weeds cover 10% of evaluation area.	Weeds cover 5% of evaluation area.	Evaluation area is weed-free.

- **Overall Vegetative Condition/ Health:** Evaluate the overall health and condition of the riparian/wetland plant species. Noxious weeds should not be included in the evaluation of the overall vegetative condition and health. Are the plants healthy or stressed? Examine leaf color, leaf size, percent of dead material, and evidence or absence of new growth. Are any diseases or insect infestations present?

0	2	4	6	8	10
60% or more plants are stressed, diseased, or infested.	At least 50% of plants are stressed, diseased or infested.	At least 40% of plants are stressed, diseased, or infested.	At least 30% of plants are stressed, diseased, or infested.	At least 20% of plants are stressed, diseased, or infested.	100% of plants are healthy.

- Interspersion of Open Water with Vegetation:** Examine the arrangement of the site’s open water features in relation to existing vegetation. For habitat loss evaluations, include the canal open water when scoring this criterion if the canal will be piped, as that open water feature will be lost. When examining an area, the surrounding landscape should be considered. For example, open water adjacent to a habitat replacement site should be considered in the baseline score, even if it is not within the project boundary.



- Connectivity:** Examine the proximity of other wildlife habitat areas, and examine the degree to which the landscape facilitates animal movement and other ecological processes. A project area near other valuable riparian/wetland habitats can add value to the overall complex and can help support larger wildlife populations. If a project area provides a corridor for wildlife movement, its value is disproportionately larger than would be expected when considering its acreage alone. If nearby riparian/wetland habitats are protected and expected to persist long-term, then their association with the project area provides greater habitat value. Protected areas include, but are not limited to, lands in conservation easements and federal or state lands managed for wildlife.

0	3	5	7	10
Isolated, and not contiguous to lands with any wildlife value.	Contiguous to or connects to other unprotected areas which have minimal wildlife value.	Contiguous to or connects to other unprotected areas which have wildlife value.	Contiguous to or connects to other protected areas which have minimal wildlife value.	Contiguous to or connects to other protected areas which have wildlife value.

- Wildlife Use:** Evaluate the use of the area by wildlife. Is wildlife observed in the area? Are there signs that the area is utilized by wildlife? Does the area contain a good food source, or provide other wildlife needs? Consider the different guilds of wildlife which may utilize the area; high use represents use by multiple guilds.

0	3	5	7	10
No or very limited use of area at any time of year.	Low seasonal use of area.	Low year-round use of area.	High seasonal use of area.	High year-round use of area.

- Uniqueness or Abundance:** Examine the overall value of habitat to wildlife and its abundance or scarcity. Is the land especially unique or valuable to wildlife? Does it provide special habitat (i.e. production area, nesting habitat, critical winter range, etc.)? Is the habitat type common or unusual?

0	2	4	6	8	10
Exhibits common or abundant wildlife value	Exhibits medium to low unique value for wildlife and is relatively abundant in the vicinity	Exhibits medium unique value for wildlife and is relatively abundant in the vicinity	Exhibits medium unique value for wildlife and is relatively scarce in the vicinity.	Highly unique value for wildlife but is relatively scarce or becoming scarce in the vicinity.	Highly unique value for wildlife and is very uncommon.

- Water Supply:** Examine the water supply for the area. Examine if the water is from a natural flowing stream or river, fed by ground water, or dependent on irrigation flows or delivery systems. Examine the nature of the water source. Is water present year-round or only seasonally? If the habitat is dependent on water from non-natural sources to maintain its HQS, then what are the terms surrounding the water supply? Is an agreement in place to ensure a reliable source of water, or has a water budget been developed to ensure the sufficiency of the water?

0	2	4	6	8	10
No water supply	Water supply is uncertain	Non-natural flows are seasonal, or year-round flows are uncertain	Non-natural seasonal flows are guaranteed; Seasonal natural flows are uncertain	Non-natural year-round flows are guaranteed or seasonal natural flows are certain	Perennial stream

- Alteration:** Examine the habitat area and surrounding landscape for evidence of human caused alteration, such as roads, mining, railroad tracks, urban and suburban encroachment. The more disturbance that has occurred on the land, the lower the score.

0	2	4	6	8	10
80% or more of land has been heavily developed or altered	70% has been developed or altered	50% has been developed or altered	30% has been developed or altered	10% or less of project or adjacent land	No alteration or development observed

Examples of evaluation scoring and justification:

Evaluation Criteria	Rationale	Score
Stratification	Site is largely missing the mid-story and over-story canopy layers. The herbaceous layer is present and functioning. Interrupted stands of coyote willow and occasional tamarisk, Russian olive, young Siberian elms and very occasional Wood's rose form the shrub layer. Shrubs overall poorly integrated into herbaceous layer. A tree layer is absent.	3
Connectivity	No connectivity with other wildlife habitat areas. Moderate connectivity with the Gunnison River via the downslope saline wetland. The river passes through public and private land, and only a small portion of the riparian corridor is vegetated in the project area. Connectivity exists to the west along the entire length of the canal, which ends in the adobes. To the east, the canal fringe is interrupted by tunnels. Excellent connectivity with upland habitat on public land that provides none of the habitat characteristics of the fringe wetland habitat evaluated. Public land is managed for multiple-use and provides moderate protections for wildlife. Private land at the west end is cultivated and not protected.	1

B. Additional Considerations

Reclamation may consider other factors when determining appropriate scoring for habitat losses or habitat replacement projects. Any inclusion of additional considerations would need to be discussed on a project by project basis, in close coordination with Reclamation and FWS. Additional considerations which could potentially be used for scoring adjustments include but are not limited to:

- **Operation and Maintenance Requirements:** Does the habitat project have low maintenance needs and a high likelihood of becoming self-sustaining?
- **Partnerships:** Is there an opportunity for local partnerships to develop and/or manage the habitat area?
- **Habitat for Sensitive or Special Value Species:** Existing habitat and replacement habitat should be evaluated for federally or State listed species or their habitat (e.g., within proposed critical habitat for yellow-billed cuckoo). Also, species of special value such as raptors should be considered.
- **Restoration of Missing Habitat Type:** There is added value to replacement lands that create or restore a community or habitat type that is currently missing or that provides a strategically important link between nearby riparian/wetland

habitats (i.e. travel corridor).

- **Educational or Social Value:** The site has value to the community as an environmental education site and will be managed to utilize this potential.

D. Land Acquisition as Habitat Replacement

Land acquisition may be considered as an option for habitat replacement by land purchase and/or protective mechanisms, such as conservation easements, for the benefit of wildlife. Land acquisition would be considered on a project by project basis. The land must include, or have the potential to include, suitable riparian and/or wetland habitat. Land acquisition may be permissible if:

- (1) the land contains degraded riparian and/or wetland habitat, a habitat replacement plan is provided, and an assurance of plan implementation is provided; or
- (2) the land is faced with an imminent threat that would notably reduce its habitat value. An imminent threat would include situations where the land is zoned for development or a development plan is in place. A habitat management plan would need to be prepared for the area in place of a habitat replacement plan. The habitat management plan should outline how the lands will be managed for the benefit of wildlife.

Credits for land acquisition would be based on the value of the land using the evaluation criteria above.

E. Stream Restoration Projects

For projects proposed to occur in and along degraded streams, habitat replacement plans could be developed which enhance streamside riparian/wetland habitat and/or instream functions. The habitat evaluation criteria listed above are not designed to evaluate instream restoration projects. Evaluations for instream restoration projects must be conducted by knowledgeable personnel with experience in recognizing visual indicators of stream function and demonstrated experience in stream restoration design and implementation.

Reclamation is in the process of drafting stream restoration evaluation criteria, and will include those criteria in this document once finalized. In the meantime, contact your Reclamation Area Office for further guidance on evaluating stream restoration projects.

F. Instream Flows as Habitat Replacement

Instream flows can help balance competing uses of water. Instream flows provide and enhance riparian vegetation and habitat for aquatic invertebrates, fishes, birds and other wildlife, and maintain the productivity, diversity, and resiliency of the biological resources which depend on riparian areas and adequate and reliable stream flows. Reclamation may consider the designation and protection of instream flows as habitat replacement if it can be shown that one or more of the following flow types may be enhanced:

- Subsistence Flows – The minimal stream flow needed during critical drought periods to

maintain specified water quality conditions and to provide critical habitat space for the survival of aquatic organisms.

- Base Flow – The “normal” flow conditions found in a river in between storms; base flows provide adequate habitat for the support of diverse, native aquatic communities, and maintain groundwater levels to support riparian vegetation.
- High Flow Pulses – Short duration high flows within the stream channel that occur during or immediately following a storm event. They flush fine sediment deposits and waste products, restore normal water quality following prolonged low flows, and provide longitudinal connectivity for species movement along the river.
- Overbank Flow – An infrequent high flow event that breaches riverbanks. Overbank flows can restructure the channel and floodplain, recharge groundwater tables, deliver nutrients to riparian vegetation, trigger germination of riparian plants, and connect the channel with floodplain habitats that provide additional food for aquatic organisms.

Some considerations when proposing instream flows as habitat replacement:

- The instream flow must be protected. The water right must be transferred to an instream flow water right, and applicable state water laws would apply (i.e. in Colorado, only the Colorado Water Conservation Board may hold an instream flow water right for wildlife).
- Seniority of the water right, and distance to the nearest downstream diversion.
- Identify the benefits of the instream flow to the affected stream segment.
- Determine the timing of instream flow availability. Would the instream flow be available at critical times to maximize seasonal benefits (i.e. available year-round, late season, low flows, etc.)?
- What is the length of the stream reach (i.e. reference reach) which would benefit from the instream flow, and/or the increase in wetted perimeter?
- Would the instream flow connect important reaches (e.g., provide water to a dewatered reach, thereby connecting two reaches of ecological importance)?
- Instream flows provided must be measured and monitored.

Instream flows may be considered for habitat replacement on a project by project basis, based on the overall value of the habitat lost as compared to the value of the proposed instream flows. An Instream Flow Assessment and Management Plan would need to be prepared, and should include the following:

- Clear goals which state the activities or functions that the instream flows are intended to support or achieve.
- Discussion of the considerations included above.
- The hydrology and flow regime of the stream system. To what degree has the natural flow regime been altered?
- Documentation showing the protection or transfer of water rights for instream flows.
- Mechanism to measure and monitor the instream flows provided as habitat replacement (i.e. construct bypass pipeline with a meter at the diversion and provide annual flow reports).
- Identify the wildlife species the instream flows will benefit, and describe these benefits.

Reclamation is in the process of drafting instream flow evaluation criteria, and will include those criteria in this document once finalized. In the meantime, contact your Reclamation Area

Office for further guidance on evaluating instream flow projects.

VII. HABITAT REPLACEMENT PLANNING

Habitat replacement plans are developed with the intent to provide complete and concurrent replacement of habitat losses for the life of the salinity control project, typically 50 years, as stated in the FOA and in the application signed and submitted by the applicant. Habitat replacement activity will occur at the same time as project construction with the goal of having all initial habitat replacement development completed at the same time as the salinity control project. If habitat projects do not last the required 50 years, Reclamation operates under the expectation that a revitalized project or new projects will be implemented to complete the 50-year requirement, at the cost of the project applicant.

A. Identifying a Habitat Replacement Project

The intent is to comply with the Salinity Control Act by developing replacement wetland and/or riparian habitat that is beneficial to wildlife, cost effective, viable and manageable for the life of the project.

An "Ideal" replacement property is one that:

- 1) Is near the salinity control project area so as to provide compensation, to the extent possible, for fish and wildlife that may be affected by the salinity control project.
- 2) Is an in-kind replacement of the particular habitat values lost.
- 3) Is contiguous to or connects other areas that have wildlife value, such as stream corridors and wetland complexes.
- 4) Has a willing and able manager (e.g. state wildlife agency, volunteer conservation group, or a city or county agency).
- 5) Has the most characteristics that would assure viability for 50 years/life of the project (e.g. location, ownership/easements, level of management/maintenance needs, fits within agency and public conservation plans and priorities, availability of managing partner)

Additional options and considerations for habitat replacement projects:

- Are there partnerships with other agencies or entities which can be utilized to stretch funding and accomplish multiple objectives?
- Are there federal, state, county or local government properties with proposed habitat projects that need funding for implementation? Examples include: national wildlife refuges, national parks and conservation areas, wilderness study areas, state wildlife areas, state parks, county-designated open space areas, and lands with conservation easements. Agencies may agree to provide long-term operation and maintenance if habitat projects fit within their long-range plans and the anticipated O&M costs are limited.
- Are there properties (such as those listed above) that do not have planned habitat enhancement projects but have potential for habitat development or enhancement?
- Are there lands under federal, state, or local jurisdictions adjacent to properties described above that could be developed and incorporated by the jurisdiction (i.e. adding adjoining land to a state wildlife area)?

- Does the applicant own or control lands with potential for habitat replacement? Ideal properties would include those along rivers or streams where sufficient groundwater and/or irrigation is available to support riparian and wetland species. Measures would need to be developed to assure that the habitat replacement is maintained for the life of the salinity control project implemented (normally 50 years).

Procedures for applicant's planning and designing habitat replacement projects:

- 1) Determine total habitat losses of lands impacted by the proposed action.
- 2) Identify opportunities for habitat projects closely resembling the Ideal property model described above.
- 3) Develop preliminary plan for habitat improvements that provide sufficient increase in total habitat value to offset losses.
- 4) Develop final plans in coordination with Reclamation and FWS. Include state wildlife agencies and landowners, as applicable.
- 5) Include monitoring, adaptive management, and reporting in the plan.

B. Preparation of Habitat Replacement Plans

Each applicant should contact the Reclamation Area Office overseeing their Cooperative Agreement for specific guidance or templates for preparing habitat replacement plans. The following items should be considered for inclusion in habitat replacement plans:

- Introduction (including the name of the salinity control project for which the habitat replacement plan is being prepared).
- State the overall objectives of the habitat replacement project.
- Describe the existing and desired ecological characteristics of the proposed site, including:
 - Habitat type and wildlife use
 - Plant communities/vegetation
 - Hydrology
 - Topography and soil conditions
 - Map showing the locations of the site
 - Site evaluation scoring and rationale.
- Provide detailed work descriptions and specifications for the project, including but not limited to:
 - Geographic boundaries of the project
 - Construction methods, timing, and sequence
 - Source(s), sufficiency and reliability of water availability and delivery
 - Methods for establishing the desired plant community
 - Methods to control invasive plant species
 - Proposed grading plan, including elevations and slopes (if applicable)
 - Planting plan
 - Soil management

- Erosion control measures
- Include a description and detailed schedule of all elements of implementation, including but not limited to grading and planting.
- Present a description and schedule of maintenance and management requirements, including invasive species control, to ensure the continued viability of the resource once construction is completed.
 - “Before” photographs and a map indicating photo locations and direction.
 - Schedule should include monitoring visits once a year with Reclamation and FWS for the first five years of the project, and issuance of a yearly report to Reclamation (with photographs) for the remaining 45 years of the project.
- Prepare a description of the ecologically-based standards that will be used to determine whether the habitat project is achieving its objectives.
- State the parameters to be monitored in order to determine if the habitat project is on track to meet performance standards and if adaptive management is needed.
- Attach a copy of the recorded Conservation Easement or other site protection document.

C. Review Procedures

The habitat replacement plan will be reviewed by Reclamation, as well as landowners and wildlife agencies, as appropriate. The plan will require acceptance by Reclamation prior to completion of NEPA or implementation of salinity control activities. Reclamation’s acceptance of the habitat replacement plan does not constitute technical approval of the design, which is the responsibility of the grant recipient.

VIII. ROLES OF FISH AND WILDLIFE SERVICE AND STATE & TRIBAL WILDLIFE AGENCIES

The FWS participates in the Salinity Control Program pursuant to authorities and responsibilities set forth in the Endangered Species Act, Fish and Wildlife Coordination Act, National Environmental Policy Act, and Migratory Bird Treaty Act. These authorities are not always applicable; however, Reclamation believes that coordination with the FWS on all program habitat replacement projects is appropriate and beneficial.

The FWS participates in the Salinity Control Program by providing technical assistance on fish and wildlife resource impact assessment, restoration, and management and acting as liaison with state wildlife management agencies. The FWS also provides independent review and oversight of program aspects dealing with fish and wildlife resources, including our assessment of the degree to which fish and wildlife have received due consideration in project planning and whether incidental fish and wildlife values foregone have been replaced.

Scope of work for FWS pertaining to the Salinity Control Program includes:

- Provide written evaluations or recommendations to Reclamation for the planning, design, and development of habitat replacement plans for Basinwide Program projects throughout the Upper Colorado River basin. Such evaluations or recommendations will be for the purpose of assisting Reclamation in assuring the habitat replacement commitments are met.
- Coordinate with Reclamation to conduct reviews and to review annual reports of existing habitat replacement projects.

Coordination with State and Tribal Wildlife Agencies (as applicable):

- If habitat replacement projects will be located on state or tribal lands, Reclamation will provide state or tribal wildlife agencies copies of all habitat replacement plans and/or wildlife agreements with a request for their review, comments and ultimate approval of the plan or agreement prior to implementation. The state and tribal wildlife agencies will be encouraged to contact the FWS Salinity Control Program coordinator to discuss the plan or agreements prior to final approval.

IX. MONITORING REQUIREMENTS

Final payment for salinity control work should be made pending sufficient progress on habitat replacement work. Once a property has been developed for habitat replacement, the grant recipient is responsible for long-term maintenance and monitoring to ensure habitat replacement is successful. Habitat replacement plans should commit grantees to maintenance and monitoring for the life of the project. In addition, Reclamation and FWS (if available) will monitor each property at least once a year for the first five years after project completion to ensure that it is performing as intended and attaining habitat replacement plan objectives. After the first five years, if the project is meeting or progressing towards desired conditions, the frequency of monitoring can be adjusted to every three to five years for the remaining life of the project. Reclamation will direct grantees to repair any determined deficiencies.